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Description and Biology of a New Species of Weevil Damaging Snake Gourd (*Trichosanthes anguina*) in South India (Part I)

by

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Introduction : Snake gourd (*Trichosanthes anguina*) is a creeper belonging to the family *Cucurbitaceae*, the fruits of which are used as vegetable in every household in South India. Apart from leaf caterpillars, fruit flies and other insect pests, a dark tiny weevil belonging to the genus *Baris* causes appreciable damage to the creeper, the grubs of which tunnel through the tender shoots and leaf petioles and cause withering of the same. Ramakrishana Ayyar (1932, 1940) has recorded this weevil (Plate II) at Tanjore. But in recent years it is noted in serious proportions in Coimbatore also. Ever since the record of the weevil the specific name has remained undetermined. Hence the author made attempts to identify the species from all the available literature and collections; but it was found different from all the species described in this genus so far. Therefore the weevil has been described by the author as new species and further the detailed studies on the biology and early stages of the insect were also studied by him. The detailed description of the adult and the details on the biology and early stages are presented in this paper.

Subfamily : Baridinae — † *Baris trichosanthis* NEW SPECIES

Female : Entirely dull black with tarsi piceous, bare; underside with a minute pale seta in each puncture.

Head seperated from the rostrum by a distinct impression, broader than long with rather small scattered shallow punctures, but no median fovea. *Rostrum* * nearly cylindrical, strongly bent near the base and gently curved beyond, slightly dilated above the insertion of antennae and the apex; longer than prothorax and a little shorter than head and pronotum put together, coarsely punctate to beyond the middle, the punctures on the apical portion rather smaller, no median carina. *Eyes* vertically elongate oval, separated above and below by the width of rostrum. *Antennae* inserted well beyond the middle of the rostrum, black, except the narrow part of the scape which is red; scape a little longer than funicle and clubbed at the base; *funicle* seven jointed, gradually widening to apex, joint 1 equal to 2 to 5 inclusive, 3 to 7 transverse, 2 scarcely longer than 3; club 4 segmented, basal segment a little longer than the rest put together and with numerous whorls of pale setae.

Prothorax broader than long, broadest at the base, sides almost parallel from the base to middle then gradually narrowing with a curve to the apical constriction; apex truncate; dorsum gently convex

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† Referred to as Baris sp. in the thesis.

longitudinally, highest at the middle and evenly set with large shallow punctures, the intervals between which from a regular raised network without any trace of median line. *Scutellum* subtriangular with shallow median impression. *Elytra* broadly ovate, evidently broader at the sloping shoulders than the base of the prothorax and thence narrow the apex, each elytron twice as long as broad, striae fairly deep with deep distinct punctures, broader and deeper near the apex where 9 and 10 unite to form a deep furrow in elytra; intervals broader than striae, falt, with irregular row of very shallow punctures, which are larger and closer on the basal half, becoming small and widely separated behind. *Legs* dull, with coarse subconfluent punctation and short recumbent pale setae; femora sunlinear, coarsely punctate and without a tooth in the middle; tibia gradually widening distally, shallowly sulcate, mucronate in all the pairs; tarsi small, spongy at the base with pale white pubscence, segment elongate and ending in two distinct curved claws.

Sternum with close punctures each with a pale white seta and with the front intercoxal space narrower than the middle one. *Pygidium* exposed long and rugosely punctate at the apical two thirds.

Length of body excluding rostrum 2·5–2·8 mm.; width 1·2–1.4 mm.

Length of rostrum 0·94—0·96 mm.

Male Similar to female in general characters but averaging slightly smaller than females. *Rostrum* shorter, thicker with dense punctures throughout, less dilated at the middle and apex; the pygidium is convex with small separate punctures.

Length of body excluding rostrum 2·2–2·4 mm.; width 1·0–1·2 mm.

Length of rostrum 0·91—0·93 mm.

Holotype one female, allotype one male and paratypes kept at the Agricultural College and Research Institute collections Coimbatore.

Distribution and most plants: The weevil has been so far recorded only in Coimbatore and Tanjore. It has been noted to attack only snake gourd. A search for alternative host plants did not reveal anything during this study.

Nature of injury: Both adults and grubs damage the crop. Adult makes a number of punctures on the leaf petioles and at the nodal region during egg lying, with the result a gummy fluid exudes from the place of injury which on drying forms a sort of white encrustation. The grubs tunnel the leaf petioles and the tender stem especially at the nodal region and feed on the inner contents with the result the vigour of the creeper is seriously affected and in serious case the crop becomes stunted and appears sickly. An infested creeper can be made out by the presence of gummy encrustation at the nodal region and petioles and by the swollen condition of the nodes.

(To be Continued)

Induction of Roots in the Cuttings of *Hibiscus rosasinensis* with Plant Growth Regulators

The effect of plant growth regulators on the hardwood cuttings of *Hibiscus rosasinensis* L., is being reported elsewhere (Shanmugavelu, 1960). The anatomical responses of the softwood cuttings of *H. rosasinensis* L., to one of the plant growth regulators, viz., indolebutyric acid has recently been reported (Shanmugavelu, 1959). In the present studies the effect of plant regulators on the semi-hardwood cuttings of *H. rosasinensis* L., is reported,

Fresh cuttings, carefully selected for age and thickness, were treated with various concentrations of indolebutyric acid (IBA), and naphthalene acetic acid (NAA), by adopting three methods, viz., (1) soak method in which the bottom end of the cutting was soaked for 24 hrs. in aqueous preparation of the plant growth regulators; (2) quick dip method, in which the basal ends of the cuttings were dipped for five seconds in aqueous concentrated preparations of the chemicals; and (3) the dust method in which the basal end of the cuttings were dipped upto one inch in the dust of plant growth regulators. After treatment the cuttings were washed thoroughly with tap water in the soak method and in the other methods they were directly planted in the well prepared sandbeds, which

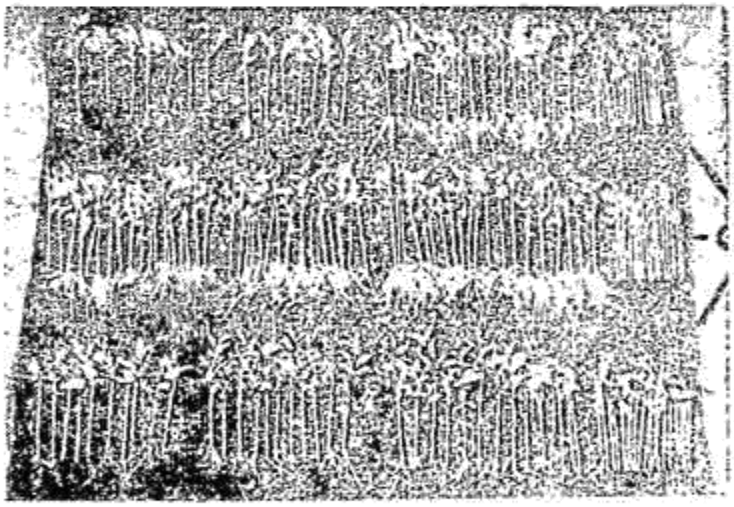

Fig. 1.
Effect of NAA on rooting of Hibiscus stem cuttings:
1st row: soak method; 2nd row dip method;
3rd row: dust method. C. control in each row.

were periodically watered to keep them sufficiently moist. There were twenty cuttings under each treatment and concentration. Proper controls were maintained in each case. The effect of the two plant regulators on

root formation in the cuttings was examined by pulling out the cuttings carefully after an interval of six weeks and the length and number of roots in each of the cuttings counted and recorded. The results are summarized in Table 1.

TABLE I

Effect of IBA and NAA on rooting of *Hibiscus rosasinensis* L., stem cuttings.

(20 cuttings included under each treatment)

Treatments		Percentage of cuttings rooted		Average No. of roots per cutting		Average length of roots per rooted cutting in cms.	
Method	Concn.	IBA	NAA	IBA	NAA	IBA	NAA
Soak	40	25	35	3	4	15·2	18·5
	60	30	35	5	7	16·7	24·4
	80	0	75	0	15	0	54·1
Quick dip	4000	90	95	8	7	54·2	31·0
	5000	95	80	14	9	53·6	46·4
	6000	100	100	12	14	71·6	86·6
Dust	1000	75	...	6	...	24·6	...
	2000	75	50	7	3	31·5	10·0
	3000	70	55	6	4	18·7	15·6
	4000	...	70	...	6	...	15·4
Control		10		1		3·7	

As against a rooting of 10 per cent of the cuttings in the control, with an average of one root 3·7 cm. in length, all the other treatments induced much better rooting in the cuttings. The highest percentage was obtained with 80 ppm. of NAA by the soak method and also by the quick dip method at 6000 ppm. of either IBA or NAA (Figure 1.) However, in some cases high concentrations of IBA proved to be toxic to the cuttings and relatively NAA was more effective, as it induced better and more root formation. The dust method gave comparatively poor results.

On the basis of the results obtained it could be easily recommended to the propagators that treating the semi-harwood cuttings of *H. rosasinensis* L., with 40 to 80 ppm. of NAA by the soak method for 24 hrs. or 6000 ppm. of either IBA or NAA by the quick dip method for five seconds would help in inducing better and more rooting of the cuttings.

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REFERENCES

1. Shanmugavelu, K. G. 1960 Effect of plant growth regulators on the hardwood cuttings of *Hibiscus rosasinensis* L., *South Ind. J. Hort.* (under Publication)

2. ,, 1959 Anatomical responses of softwood cuttings of *Hibiscus rosasinensis* L., to indolebutyric acid. *Madras Agri. J. 46 :* 12 : 484–85.

Further Observations on Chlorophyll Deficient *Striga* Plants

The occurrence of *Striga* plants with yellow leaves which dried without reaching the reproductive phase was recorded in 1952. In the monsoon season of 1957, in a field of Sorghum heavily infested with the root parasite, *Striga*, eight *Striga lutea* plants which were completely white in colour were observed. In spite of being completely devoid of chlorophyll, these plants were vigorous and healthy and fruited profusely like the normal plants which are green in colour and partially parasitic on the host. These plants which might have arisen as a result of mutation indicate physiologcal adaptation from a partially parasitic mode of nutrition towards a higher level of parasitism resulting in total dependence on the host plant.

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